

CLAIMS

1. A process for producing a carbonyl compound,
comprising allowing water to undergo phase transition to a
5 supercritical or subcritical state in the presence of an alcohol
compound to produce/generate water-derived hydrogen and at the same
time convert the alcohol compound into a corresponding carbonyl
compound.
2. A process for generating water-derived hydrogen,
10 comprising bringing water into a critical state in the presence of
a secondary alcohol.
3. The process according to claim 2, wherein the process
is carried out by introducing the secondary alcohol in a reaction
tube along with water and heating and/or pressurizing the mixture
15 of the alcohol and the water to bring the water into the
supercritical state.
4. The process for producing hydrogen according to claim
2 or 3, wherein the phase transition of the water to the
supercritical or subcritical state is carried out in an oxygen-free
20 environment.
5. The process for producing hydrogen according to claim
4, wherein the oxygen-free state is established by removing oxygen
from the atmosphere in the reaction system.
6. The process for producing hydrogen according to claim
25 4, wherein the oxygen-free state is established by using
deoxygenated water.
7. The process for producing hydrogen according to claim
4, wherein the oxygen-free state is established by removing oxygen
from the atmosphere in the reaction system while using deoxygenated
30 water.
8. A novel process for producing a carbonyl compound,
comprising reacting a primary or secondary alcohol with subcritical
or supercritical water to convert the alcohol into a carbonyl

compound.

9. The process according to claim 8, wherein the process is carried out by introducing the primary or secondary alcohol in a reaction tube along with water and heating and/or pressurizing the mixture of the alcohol and the water to bring the water into the subcritical or supercritical state.

10. The novel process for producing a carbonyl compound according to claim 8 or 9, wherein the reaction of the primary alcohol or the secondary alcohol with the subcritical or supercritical water is carried out in an oxygen-free environment.

11. The novel process for producing a carbonyl compound according to claim 10, wherein the oxygen-free state is established by removing oxygen from the atmosphere in the reaction system.

12. The novel process for producing a carbonyl compound according to claim 10, wherein the oxygen-free state is established by using deoxygenated water as the water to be brought into the subcritical or supercritical state.

13. The novel process for producing a carbonyl compound according to claim 10, wherein the oxygen-free state is established by removing oxygen from the atmosphere in the reaction system while using deoxygenated water as the water to be brought into the subcritical or supercritical state.